APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,827	01/04/2002	Upendra V. Chaudhari	YOR920010539US1(590.076)	7326

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EXAMINER
HAN, QI

ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/042,827	CHAUDHARI ET AL.
	Examiner	Art Unit	
	Qi Han	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on <u>10/09/2007</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-21</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-21</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

1.   The text of those sections of Title 35, U.S. Code not included in this action can be found

in a prior Office action.

Response to Amendment

2.   This communication is responsive to the applicant's amendment filed on 10/09/2007.

The applicant(s) amended claims 1, 7, 11 and 21 (see the amendment: pages 2-6).

Response to Arguments

Applicant's arguments filed on 10/09/2007 with respect to the claim rejection under 35

USC 102 and/or 103, have been fully considered but moot in view of the new ground(s) of

rejection, since the amended claims introduce new issue/new matter that changes the scope of the

claims, and the arguments are based on the amended limitation. It is noted that the previous

cited references are still applicable to the newly amended claims, because the disclosure of

reference(s) covers the amended and argued limitation(s).

In response to the applicant's argument that "Gao thus teaches a way form these claimed

feature and therefore cannot be properly asserted either alone or in combination with the teaching

of Kuhn et al. as basis for rejection" (see Remarks: pages 8-9, bridge paragraph), the examiner

disagrees with the applicant and has a different view of the prior art teachings and claim

interpretations.

Firstly, it should be pointed out that the referenced content of the specification (page 7, lines 9-10) provided by the applicant (see Remarks: page 8, paragraph 4) lacks specific disclosure for supporting the argued and amended limitation.

Secondly, the argument based on the amended limitation and teaching from Gao (see bolded terms in Remarks: page 8, paragraph 4) fails to present evidence for the argued teach-away relationship between them and also lacks specific analysis for supporting the applicant's assertion.

Fourthly, it is unclear what the newly amended limitation "**untrained** speech and audio data" really is, because the limitation is not commonly used/accepted term(s) in the art and lacks specific definition/description in the original specification. Furthermore, it is well known in the art that statistical models (patterns or systems) need to be trained by using training data (such as speech or audio data), but data (speech or audio data) itself does not need to be trained. Therefore, saying "**untrained** speech and audio data" lacks a meaningful sense to one of ordinary skill in the art.

Finally, it is noted that Gao discloses that his clustering process/system uses training speakers with statistical models (col. 2, lines 17-45), and the applicant's clustering also uses statistical models and training (see specification: page 7, lines 15-7, page 8, line 6), which not only shows that Gao does not teach away from the claimed feature, but also provides highly related disclosure for supporting the rejection, in light of the specification disclosure. Therefore, the rejection, either Gao alone or combining with other reference(s), is properly addressed.

For at least above reasons, the applicant's arguments are not persuasive.

Claim Objections

3.   Claim 20 is objected to because of the following informalities:

Regarding claim 20, the claim should be dependent on claim 11 (not claim 1) (and

interpreted as such hereinafter), because it is a method claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to
> which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth
> the best mode contemplated by the inventor of carrying out his invention.

4.   Claims 1- 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed

invention.

Regarding claims 1, 11 and 21, the newly amended limitation "obtaining **untrained**

speech and audio data as input" introduces new subject matter, because it is not specifically

disclosed in the original specification. It is noted that the content of the specification (page 7,

lines 9-10) referred by the applicant (see Remarks: page 8, paragraph 4) does not specifically

describe the claimed limitation.

Regarding claim 2-10 and 12-20, the rejection is based on the same reason described for

claims 1 and 11, because the dependent claims include the same or similar problematic

limitation(s) as their parent claim(s).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.   Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 11 and 21, the newly amended limitation "obtaining **untrained** speech and audio data as input" is indefinite because it is unclear or confused that what the term "**untrained** speech and audio data" really is. It is noted that the limitation "**untrained** speech and audio data" is not commonly used/accepted term in the art, and it also lacks specific definition/description in the original specification. Further, it is well known in the art that statistical models (patterns or systems) need to be trained by using training data (such as speech or audio data), but data (speech or audio data) itself does not need to be trained. Therefore, saying "**untrained** speech and audio data" does not make sense to the examiner.

Regarding claim 2-10 and 12-20, the rejection is based on the same reason described for claims 1 and 11, because the dependent claims include the same or similar problematic limitation(s) as their parent claim(s).

Claim Rejections - 35 USC § 102

6.   Claims 1-3, 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Gao et al. (6,073,096) hereinafter referenced as Gao.

As to **claims 1, 11 and 21**, as best understood in view of claim rejection under 35 USC

112 1st and 2nd (see above), Gao teaches:

an arrangement for obtaining untrained speech and audio data as input data (acoustic

information and speech, col. 5, lines 1-5 and lines 59-60; also see col. 2, lines 17-45);

creating a predetermined number of non-overlapping subsets by splitting the input data

recursively (col. 9 lines 50-60; clustering is done until the testing brings each cluster system

closer to the testing speaker, thus an inherent recursive process).

said clustering being independent of any model wherein the splitting of the input data into

predetermined number of non-overlapping subsets occurs independent of a model (col. 9 lines

60-67; independent model is for new speakers);

wherein there is no variability in the clustering due to randomness (col. 9 lines 50-60;

clustering is done until the testing brings each cluster system closer to the testing speaker, hence

avoiding randomness in clustering a speaker into section that is unlike the test speaker).

As to **claims 2 and 12**, which depend on claims 1 and 11, Gao teaches initially splitting

the input data into at least two sets of output data (Fig. 3 elements 24).

As to **claims 3 and 13**, which depend on claims 2 and 12, Gao teaches:

splitting the at least two sets of output data recursively (col. 9 lines 50-60; clustering is

done until the testing brings each cluster system closer to the testing speaker, thus an inherent

recursive process and Fig. 3); and

repeating the recursive splitting of output data sets until predetermined number of non-

overlapping subsets is obtained (Fig. 3 and col. 9 lines 50-60; clustering is done until the testing

brings each cluster system closer to the testing speaker, thus an inherent recursive process).

7.   Claims 4-10 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Gao in view of Kuhn et al. (6,343,267) hereinafter referenced as Kuhn.

As to **claims 4 and 14**, which depend on claims 2 and 12, Gao does not explicitly teach

an eigenvector decomposition relating to the input data. However, Kuhn et al. do teach

determining an eigenvector decomposition relating to the input data (eigenvectors generated

from speakers, col. 7, lines 8-9). Therefore it would have been obvious to one of ordinary skill

in the art at the time of the invention to implement Gao's model into Kuhn et al.'s eigenvector

decomposition via data clustering because Kuhn et al. teach that this would improve speed and

efficiency at which speaker and environment adaptation is performed (col. 1, lines 39-40 and 45,

50-59).

As to **claims 5 and 15**, which depend on claims 4 and 14, Gao teaches, creating a

predetermined number of non-overlapping subsets (col. 4, lines 59-61). Gao does not explicitly

teach determining eigenvector projections. However, Kuhn et al. do teach adapted to determine

vector projection coefficients (coefficients, col. 7, line 64) onto the set of eigenvectors

("eigenvector", col. 8, line 52 and col. 2, line 34) in the eigenvector decomposition

("eigentransformation vectors", col. 16, line 35). Therefore, it would have been obvious to one

of ordinary skill in the art at the time of the invention to implement Gao's data subsets into Kuhn

et al.'s eigenvector projection, because Kuhn et al. teach that this would improve speed and

efficiency at which speaker and environment adaptation is performed, col. 2, lines 16-19.

As to **claims 6 and 16**, which depend on claims 5 and 15, Gao does not explicitly teach

the recited probability density. However, Kuhn et al. do teach determining a probability

distribution for the vector of projection coefficients (probability density for vector...from

coefficient, col. 5, lines 30-36). Therefore, it would have been obvious to one of ordinary skill in

the art at the time of the invention to implement Gao's data subsets into Kuhn et al.'s

predetermine subset model for determining probability density because Kuhn et al. teach that this

will improve speed and efficiency at which speaker and environment adaptation is performed,

col. 1, lines 39-40, 61-62 and col. 2, lines 16-19.

As to **claims 7 and 17**, which depend on claims 6 and 16, Gao teaches, yield the at least

two sets of output data based on their relation to the threshold ("threshold value", col. 5 lines 37-

41, 46-47; Fig. 5 step 52; and Fig. 4 subspacel.2). Gao does not explicitly teach of relating the

threshold to a probability distribution value. However, Kuhn et al. teach maximum likelihood

involving probability density (col. 5, lines 30-31 and col. 10, lines 31-33). Therefore, it would

have been obvious to one of ordinary skill in the art at the time of the invention to implement

Gao's data subsets into et al.'s assign threshold values based on probability density for clustering

accuracy because Kuhn et al. teach that this would provide the probability distribution function

description of the plurality of parameters based on observed data from speakers, thus weights the

data which is informative, col. 5, line 24, 29 and col. 8, lines60- 62.

As to claims **8 and 18**, which depend on claims 7 and 17, Gao teaches, inherent N-I

threshold values ("threshold value", col. 5 lines 37-41, 46-47; Fig. 5 step 52; and Fig. 4

subspacel.2).

As to **claims 9 and 19**, which depend on claims 8 and 18, Gao teaches the threshold is a

value of the function relating to the projection coefficients for which the probability distribution

function equals m/N, where m is a number from 1 to N-1 (col. 5 lines 37- 41, 46-47; Fig. 5 step

52; and Fig. 4 subspacel.2; the equal probabilities of correct clustering, one needs to set an equal

probability threshold, for 2 clusters setting it to ½, for 3 clusters to 1/3, etc).

As to **claims 10 and 20**, which depends on claims 1 and 11, Gao teaches, wherein data

clustering relates to the enrollment of target speakers in a speaker verification system (col. 5

lines 30-35).

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A

shortened statutory period for reply to this final action is set to expire THREE MONTHS from

the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the

mailing date of this final action and the advisory action is not mailed until after the end of the

THREE-MONTH shortened statutory period, then the shortened statutory period will expire on

the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory

period for reply expire later than SIX MONTHS from the date of this final action.

9.   Please address mail to be delivered by the United States Postal Service (USPS) as
follows:
       Mail Stop ____
       Commissioner for Patents
       P.O. Box 1450
       Alexandria, VA 22313-1450
       or faxed to: 571-273-8300, (for formal communications intended for entry)

Or: 571-273-8300, (for informal or draft communications, and please label "PROPOSED" or "DRAFT")
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Effective January 14, 2005, except correspondence for Maintenance Fee payments, Deposit Account Replenishments (see 1.25(c)(4)), and Licensing and Review (see 37 CFR 5.1(c) and 5.2(c)), please address correspondence to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolater, etc.) as follows:

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Alexandria , VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (571) 272-7604. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see http://pair-direct.uspto.gov.

QH/qh
December 18, 2007

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER